



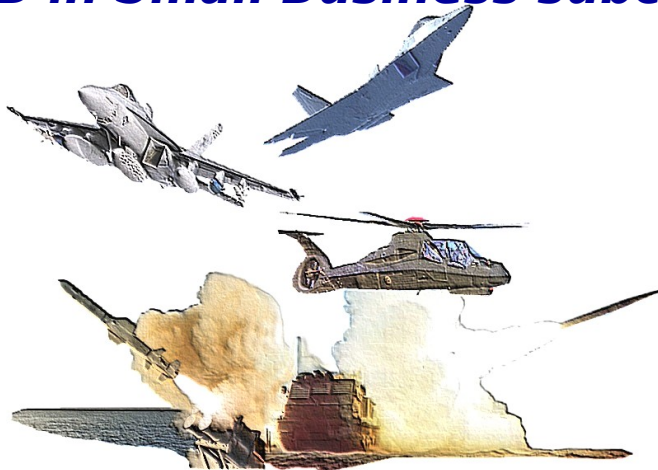
DCMA and Predictive Analysis

Presented By:
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DCMA Chair DAU

Full Service Acquisition Impact

Scope of work

- All major weapons system programs
- \$1,173B in Contract "Face Value"
- \$129B Unliquidated Obligations
- 335,000 Contracts
- 16,000 Contractors
- Flight Operations (1200 Aircraft/yr)
- \$86B Government Property
- \$8B Progress Payments
- \$12B Performance Based Payments
- \$37B in Small Business subcont. plans



Span of Control

- 11,000 Professionals
- Over 800 Locations

Worldwide

- 50 Major Field Commands
- \$1.1B Budget Authority
- \$81M

Reimbursable/Foreign
Military Sales

-Combat Support Agency

Readiness and Combat Support

The Apparent

Big Items - Big \$ - High Attention



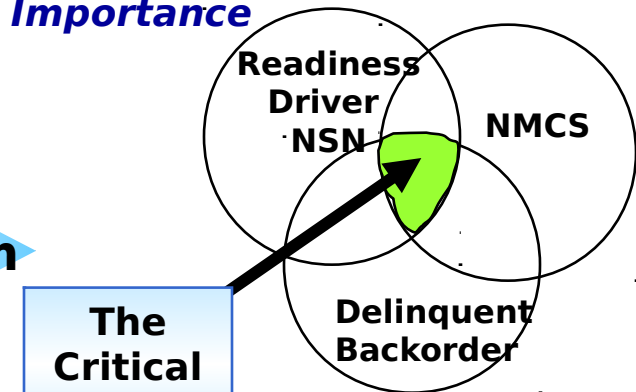
**Depot Maintenance
Timely Return to
Mission Capable
Status**

*DCMA
covers...*

The Full Spectrum

The Less Apparent

Small Items - Small \$ - High Importance



**The
Critical
Few**

**Informed
Engagement
on Spares**

- **Combat Support Agency**
- **Focus on Customer's Readiness**
- **Portals to Customer's Supply Chain**

Vision, Mission & Goals

Vision:

An Indispensable Partner, Providing Our Customers
Flexible and Responsive Contract Management and
Acquisition Life Cycle Solutions.
It Starts With Me!



Mission:

Provide Customer Focused Acquisition Support and Contract
Management Services to Ensure War-fighter Readiness, 24/7
Worldwide

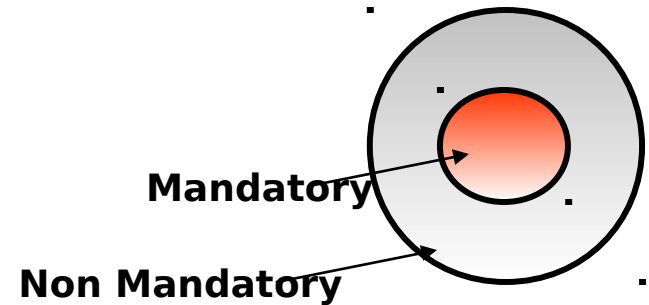
Strategic Goals:

Deliver great customer service.
Lead the way to efficient and effective
business processes.
Enable DCMA people to excel.

Performance
Contract goals
negotiated with
customers –
reinforced by
PM/ICP MOAs at
the local level

Where is The Agency Going?

- Customer Centered Culture
- More Latitude with Requisite
Greater Responsibility
and Accountability
- Performance Measures Defined
by Customer Success Requirements
- More Independent Predictive Analysis –Sooner
- Smaller, More Highly Skilled and Mobile Workforce



Achieve Customer Outcomes!

Provide Customer Focused Contract Management

- Right Item = Quality
- Right Time = On-Time Delivery
- Right Price = Value for Money

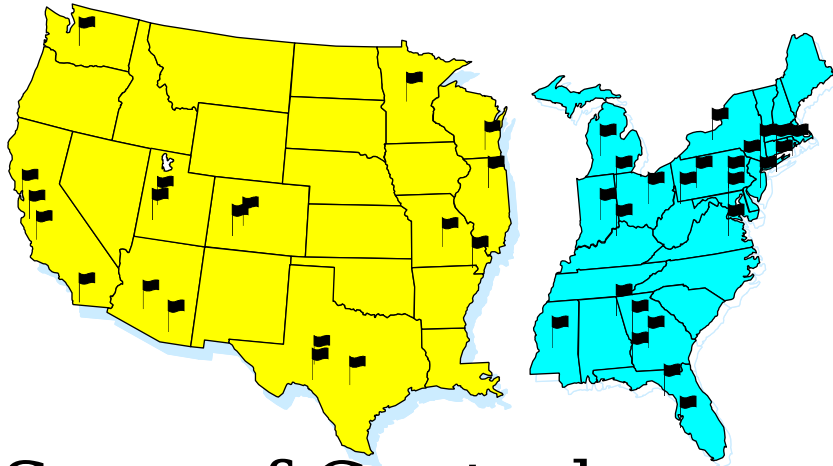
Combat Support Agency

- Military Operations
- Readiness of Fielded Systems
- Modernization of Military Equipment
- Industrial Surge – During Conflict



Teaming with Military Services and Defense Contractors to ensure that tax dollars achieve mission requirements

Worldwide Acquisition Impact



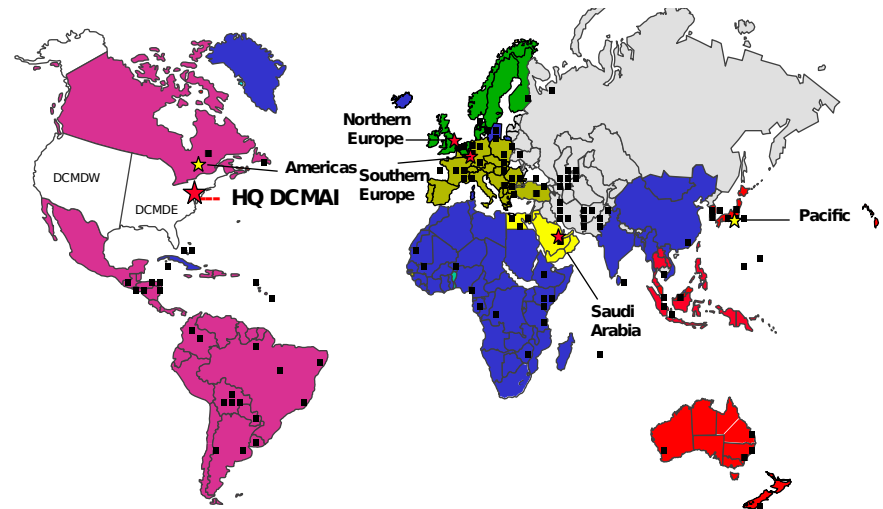
Span of Control

- 11,125 professionals
 - ACOs, PI, QA, Engr, IS, Prop
- 800 locations
- 60 major field Commands
- \$1.1B budget authority
- \$81M reimbursable FMS
- Standard Procurement System
- Combat Support Agency

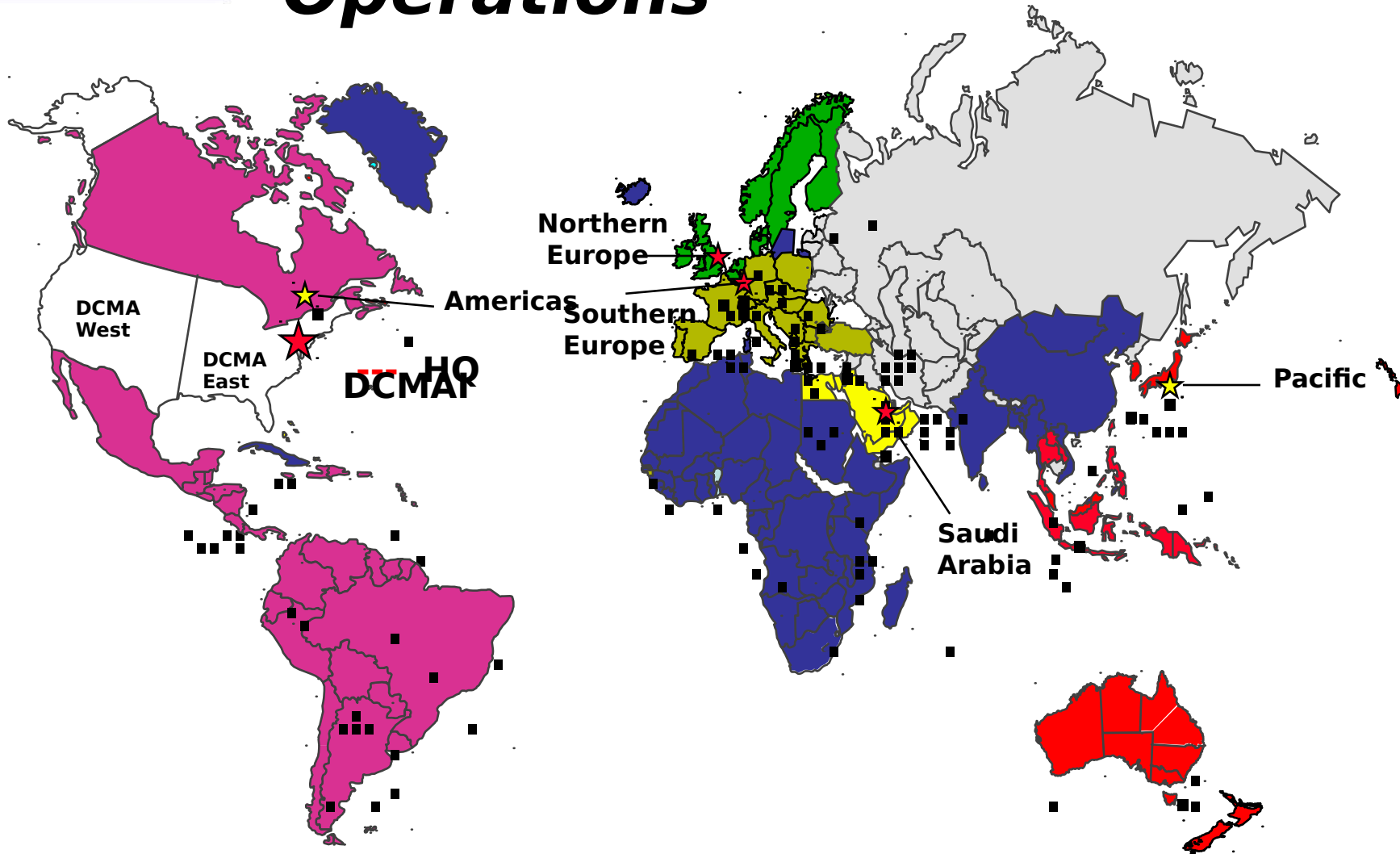
Updated #s Jan 03-FBP

Scope of work

- \$860B Face Value of Contracts
- 19,000 Contractors
- 320,000 Contracts
- \$116B Unliquidated Obligations
- All ACAT 1, 2 and 3 programs
- Flight Operations (1200 Aircraft/y)
- \$95B Gov't property in plant
- \$8B Progress Payments
- \$12B Performance Based Payment



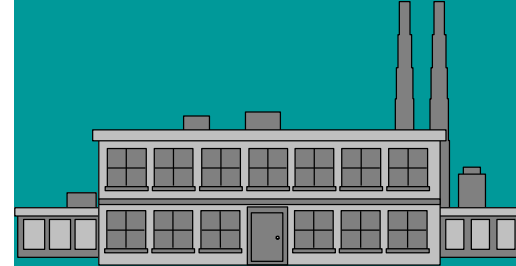
DCMA Worldwide Operations



5 CMOs with 32 Offices in 21 Countries

- Resident In Plant Offices

- Major Contractor



- Geographic Offices

- » All Smaller Contractors in an Area



- Full Delegation:

- Program Support Team (PST):

- Program Integrator (PI) - PST Coordinator

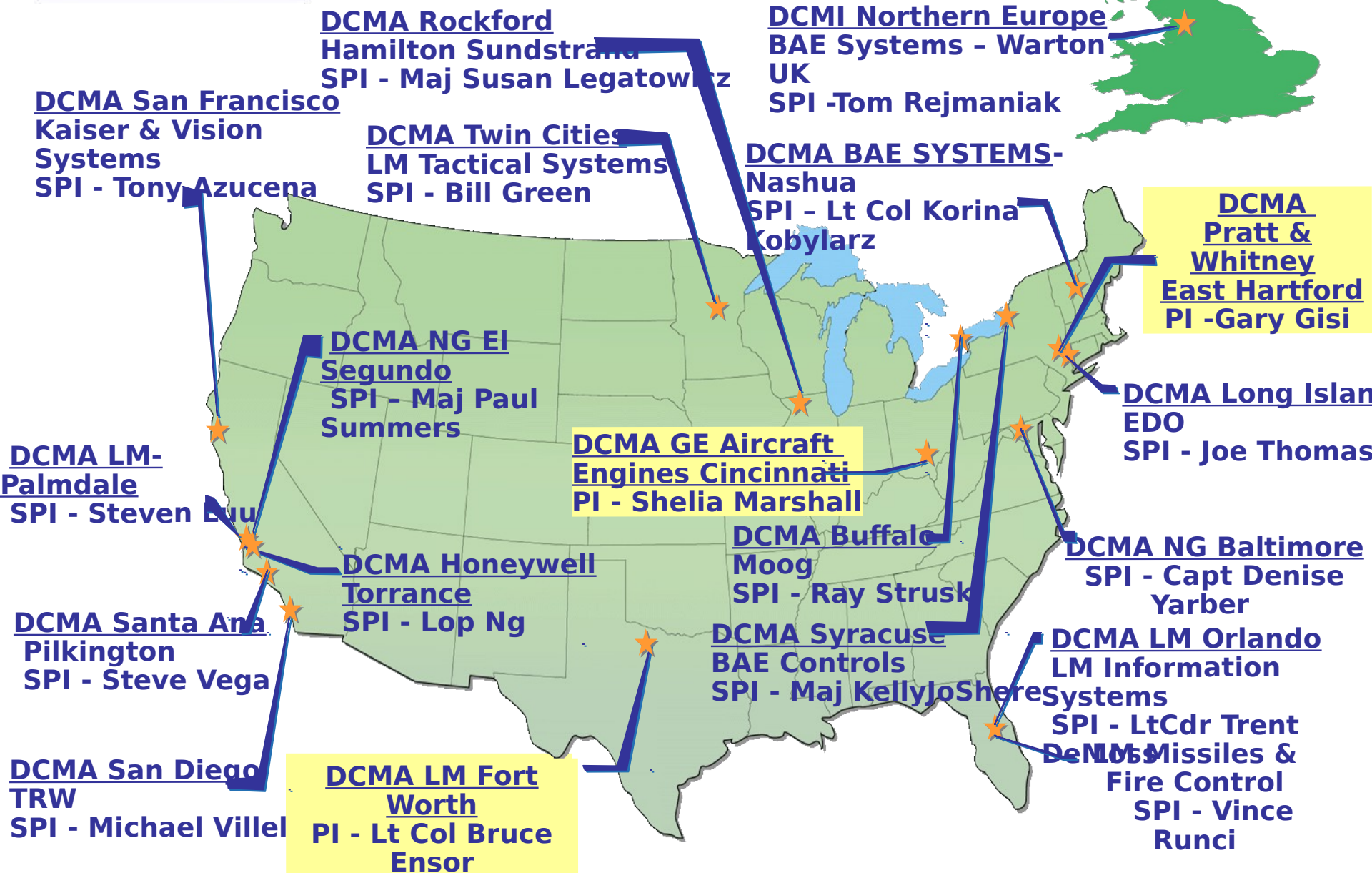
- ACO and CA - Contract Admin, Payments Etc.
 - Engineering Support - EE, Mech., Software
 - Quality Assurance - Mech., Electronics, S/W
 - Production - IE/IS
 - Subcontract Support (SPST)

- Matrix Support:

- Property
 - Transportation
 - Safety

- Partial Delegation: **The type and level of support can be tailored to fit the individual PM desires, program needs & risk levels.**
- Some of the reasons for a partial delegation are:
 - **Low Risk Program**
 - **Commercial Items**
 - **Early Acquisition Phase**
 - **Low dollar value**
 - **PMO is providing oversight**
 - **Very mature production**
- ✓ Remember it's not All or Nothing - But some strings may be attached !

JSF PI/SPI Network



What is Predictive Analysis?

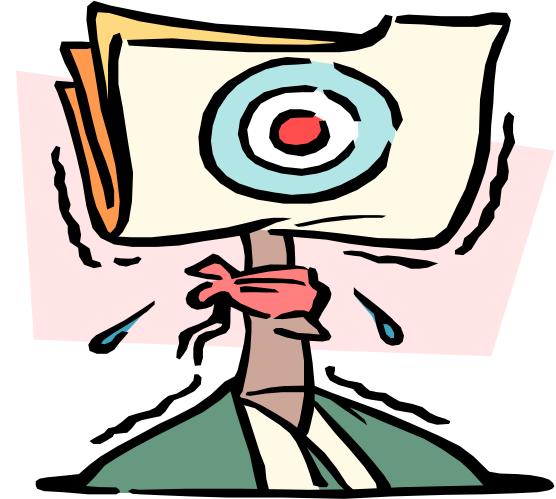
Predictive Analysis is:

the collection, examination and synthesis of information and data from our on-site presence which states (in terms of future cost, schedule and performance) what we forecast will happen based on our special knowledge of the supplier and program



Predictive Analysis - What it is NOT

- Wild Guess
- Throwing Darts
- Unsupported opinion
- Shot in the dark
- *It is not a certainty - our goal is to inform the right people early, which may prevent the event!*



Why Predictive Analysis?

More Predictive Insight into:

- Systems & Software Engineering – Technical Risk
- Schedule Surveillance – Critical Path
- Quality – Product/Process impact
- Direct/Indirect Cost Visibility – Rates
- Total Ownership Cost- Sustainment
- Change Management – Configuration
- EVM – Cost & Schedule integrated with Technical Performance



**I Know What Kept Me Awake Last
Night.....**

Tell Me What Will Haunt Me Three

Months from Now!!

*Tell Customers
what they don't already know!*

Program Manager already has:

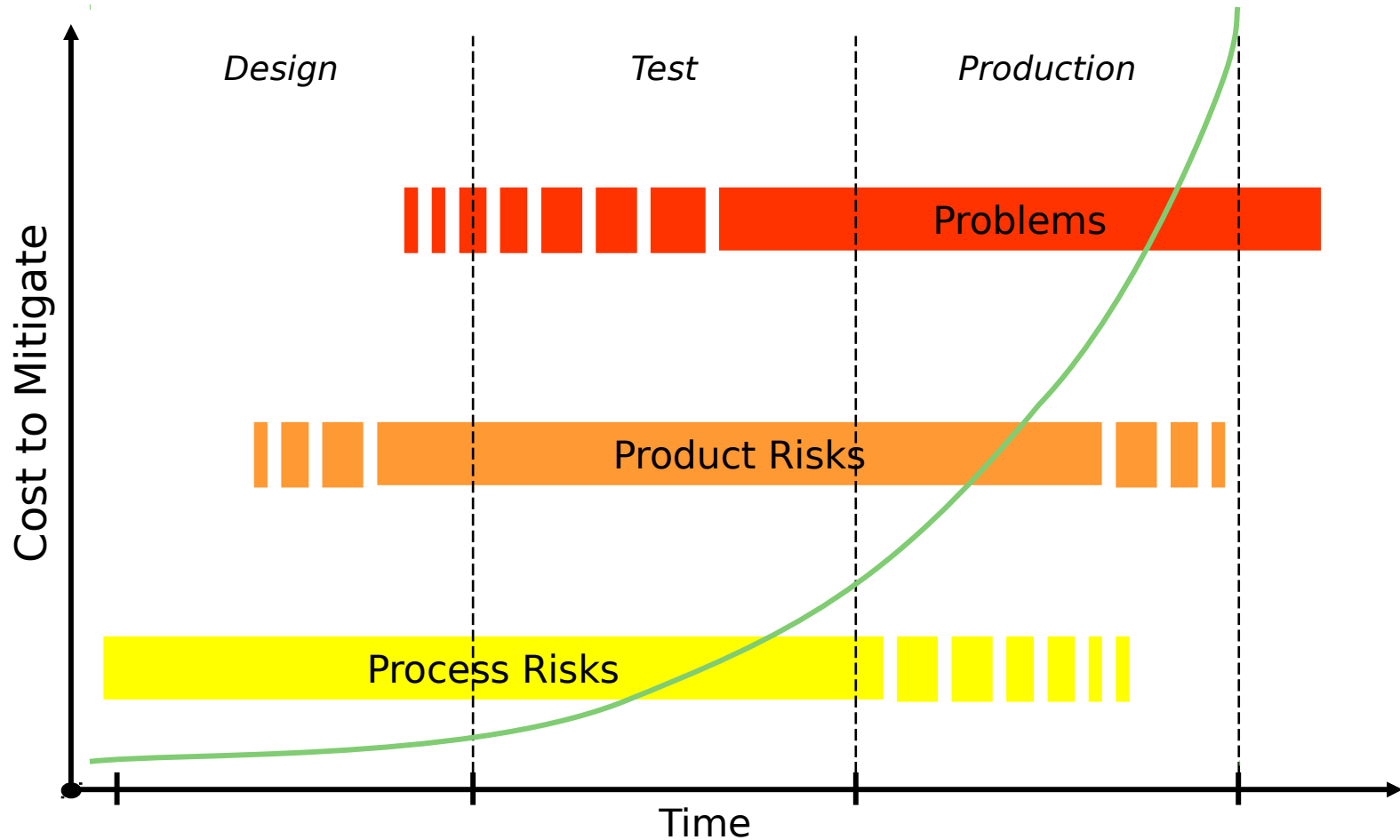
- Technical Data
- Status Reports & Plans
- Integrated Master Schedule
- Full Technical and Business Staff
- Cost Performance Report (CPR)
- wInsight (or some other software tool)



Predictive Analysis



Cost To Mitigate Increases Exponentially



**Risk Management or Damage
Control?**

Is it a Riskor a Problem

Preventive $\xrightarrow{\text{Action}}$
May occur $\xrightarrow{\text{Problem}}$
Strategic $\xrightarrow{\text{Thinking}}$
Long $\xrightarrow{\text{Time horizon}}$

Corrective
Has occurred
Tactical
Short

**Manage Risk and
Future Issues**

(Predictive Analysis)

**Manage Problem
and Future Impact**

(Corrective Action)

Steps to Making Predictions

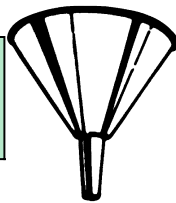
Plan Surveillance

Plan surveillance activities in a risk based approach

Apply Measures & Collect Data

Apply measures process to collect data from all available sources

Analyze Data



Analyze/synthesize data collected in a teamed environment. You may need several sources to come to a conclusion

Generate Predictive Statement(s)

Data Sources Available

- Schedule analysis
- Critical Path analysis
- TPM analysis
- TRL assessments
- Company Capability indicators (Maturity)
- EVMS analysis
- Quality Process reviews
- Product/Process audits
- Technical System reviews
- Water Cooler talks
- Scrap & Rework and Yield data
- Business Systems reviews
- SPI inputs
- Quality Delegation reports
- PST Member surveillance
- PST Program Risk assessments
- Contractor Capability [Special Knowledge](#)
- Software Surveillance results
- Payment Requests
- Requests for STE and baseline changes
- [Intuition and critical thinking](#)

- CMMI
- TPMs
- TRLs
- Design Iterations
- Complexity
- How much Systems Engineering?
- Business Processes – Billing, Estimating Accounting
- Earned Value
- IEAC
- Integrated Master Schedule
- Critical Path
- Quality Assurance – Performance data and analysis
- Best Manufacturing Center of Excellence
- Integrated Spreadsheet
- Predictive Models

- Customers want Predictive Analysis
- Need to forecast future problems
- To be truly predictive, one needs to look at the processes used to create the various products

Is what you know about the progress reflected in the schedule?

- Examine Control Account Plans and detailed schedules

Do you believe the schedule remaining for a task is sufficient?

Examine Horizontal Dependencies

- Are the dependencies tied properly so that a slip on one dependent activity reflects on the other activity?

Examine Vertical Dependencies

- Are slips in the detail level critical path reflected in

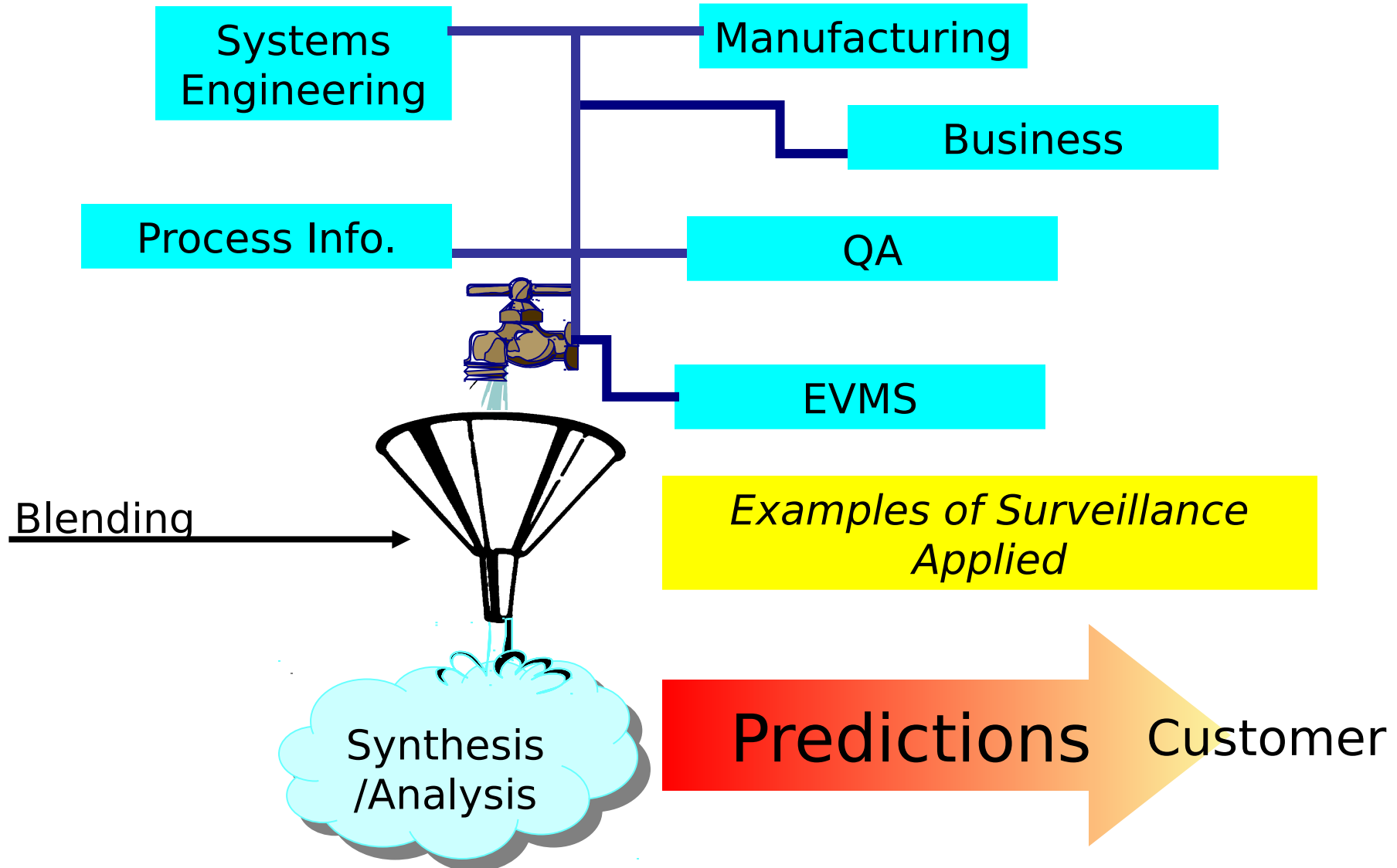
Predictive Analysis takes under consideration what is *strong or weak* about a contractor's process

Predictions should trace directly to:

- Strengths & Weaknesses of the contractor's process and the words used in our predictions should effectively communicate Strengths and Weaknesses as the **rationale** for such a prediction
- Similarly...Changes or Adjustments to our in-plant activities should be based on the same observed strengths and weaknesses -- with a customer centered focus on working with the contractor to improve

- Major milestone exit criteria (e.g. PDR, CDR)
 - *If these slip, all subsequent events are impacted*
- Drawing release
 - *This is an excellent early indication of schedule validity*
- Number of changes per drawing
 - *If the drawing change rate exceeds the planned change rate, then the amount of design effort will be higher than budgeted*
- Dependency
 - *Number of sub-contracted items and their complexity*
- Stability
 - *Anticipated changes due to external or internal factors*

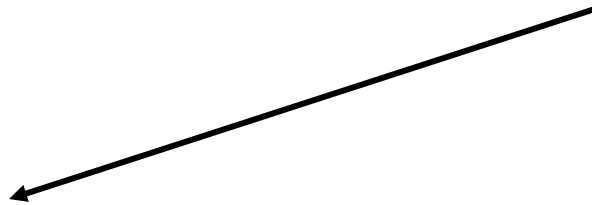
Tying it All Together



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**EVM data can
identify the source
of the variance!**

**WBS
ELEMENT**



??????

WBS
ELEMENT

EVM data can identify
the source of the
variance!

Your CAM Interview should be asking.

- Is the CAM aware of the variance?
- Has the root cause of the problem been identified? If not when?
- Has a corrective action plan been developed? If not when? If it has been how are they tracking?

This Provides a
baseline

WBS
ELEMENT

EVM data can identify
the source of the
variance!

**Your CAM Interview should
be asking.**

- Is the CAM aware of
the variance?**
- Has the root cause
of the problem been
identified? If not when?**
- Has a corrective
action plan been developed?
If not when? If it has been
how are they tracking?**

**When do you plan to
have this under control
and or resolved?**

**What is the on going
impact to the
program?**

What's Happening Now?

- **Is progress being made towards recovery plans?**
- **Are there technical issues that will impact the plan?**
- **Is the Critical Path affected?**
- **What do you predict will happen next month?**
- **Can you predict beyond next month?**



??????

WBS
ELEMENT

ENGINEER - What is the Technical Maturity Level? Is the corrective action and time frame reasonable based on TML? How will this effect any TPM's or KPP's.

If the Technical Maturity Level (TML) is low the risk can be higher. If the TML is high then the risk is probably centered on integration rather than new technology and the risk may be lower.

If the problem is associated with a Technical Performance Measure (TPM) you could be looking at an impact on the next Milestone review & remember PM's get fired for Milestone Breaches so it's important to them.

??????

**ENGINEER -How will this
effect any TPM's or KPP's.**

WBS
ELEMENT

If the problem is associated with a Technical Performance Measure (TPM) you could be looking at an impact on the next Milestone review & remember PM's get fired for Milestone Breaches so it's important to them.

- Is Systems Engineering *applicable to the program*?
- Does the program include *Software Engineering*?
- Does the supplier have any *process* weaknesses?
- Are the *Requirements* stable?
- How *Complex* is the program?
- What is the *Technology Readiness Level*?
- Are there numerous *Design* iterations?
- Do the *Technical Performance Measures* (TPMs) have a planned profile?

Can you be predictive?

??????

WBS
ELEMENT

Industrial Specialist - Is this on the Critical Path? How does what the CAM is saying fit with the Integrated Master Schedule and what I'm seeing when I go out onto the floor?

If the WBS element is on the Critical Path the risk of a schedule impact is increased. The contractor trying to fix this may also drive a cost increase. Do I see the corrective action on the floor or am I seeing bottlenecks and work around activity.

The IMS *should be the framework* for program reviews and assessments

- Are the schedules shown during the review representative of what is happening on the program?
- Are problem areas identified and discussed?

Predictive Analysis

- By viewing the dependencies identified on the IMS, you can forecast how schedule problems on one WBS will impact other WBS elements

- Know which WBS elements are on or near the Critical Path
- Compare them with the actual performance
 - *If tasks are delayed and near/on CP, then this is a high risk area that must be managed*
 - *If tasks are shown as 'on schedule' yet you are aware of performance issues, investigate why CP does not reflect delay*
- Do you think the planned Corrective Action will have the desired effect on the Critical Path schedule?
- Has the Corrective Action that was taken last month and this month had the intended impact?

Is what you know about the progress reflected in the schedule?

- Examine Control Account Plans and detailed schedules

Do you believe the schedule remaining for a task is sufficient?

Examine Horizontal Dependencies

- Are the dependencies tied properly so that a slip on one dependent activity reflects on the other activity?

Examine Vertical Dependencies

- Are slips in the detail level critical path reflected in

??????

WBS
ELEMENT

Quality Assurance - What am I seeing on the floor? Is this a process issue? Is this a make or buy item? Is what the CAM saying proved out on the floor? What am I seeing in rework? Is the contractor requesting waivers and deviations?

The QA is in a unique position to provide the team a sanity scrub between what the contractor is saying and what he or she is seeing. If this is a buy item do we have a delegation and what is the DCMA representative at the sub saying about the problem?

What can the QAS provide to the PST?

- Performance Data and Analysis
- Test information/results
- Trends
- Bottlenecks *
- Scrap/Rework
- Subcontracting effort/issues
- Contractor Personnel Skill Level
- Management/Labor Insights



*** QAS sometimes acts as a production specialist**

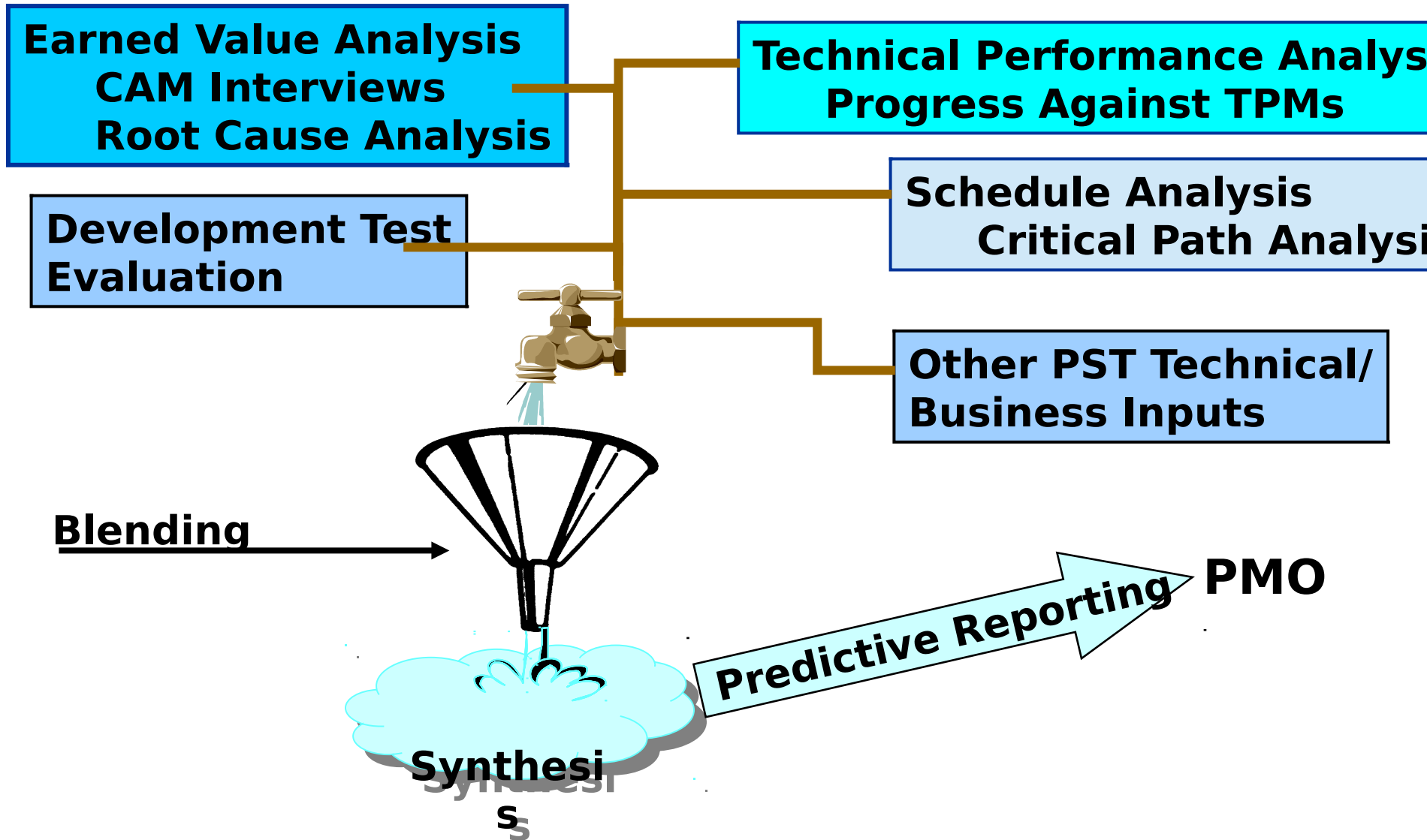
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WBS
ELEMENT

ACO - Have I received requests for baseline changes? How does this stack up against progress payment requests, contract mods? Am I seeing requests to purchase special test equipment (STE) ?

The ACO should be looking at the business indicators. Progress Payment reviews can show a different picture. Baseline changes with out corrective action are problematic. The new need for STE can be an indicator of a problem. What do the contract mods indicate? Are there any up coming rate or overhead impacts?

Predictive Analysis



QUESTIONS?

